

Teachers

Organizers:

Ole Lund,
Morten Nielsen,
Paolo Marcatili

CBS, DTU Systems Biology



Goals

- + How we can use existing tools for real-life problems
- + Understand how these tools work
- How can we develop novel tools

Hot in immunoinformatics

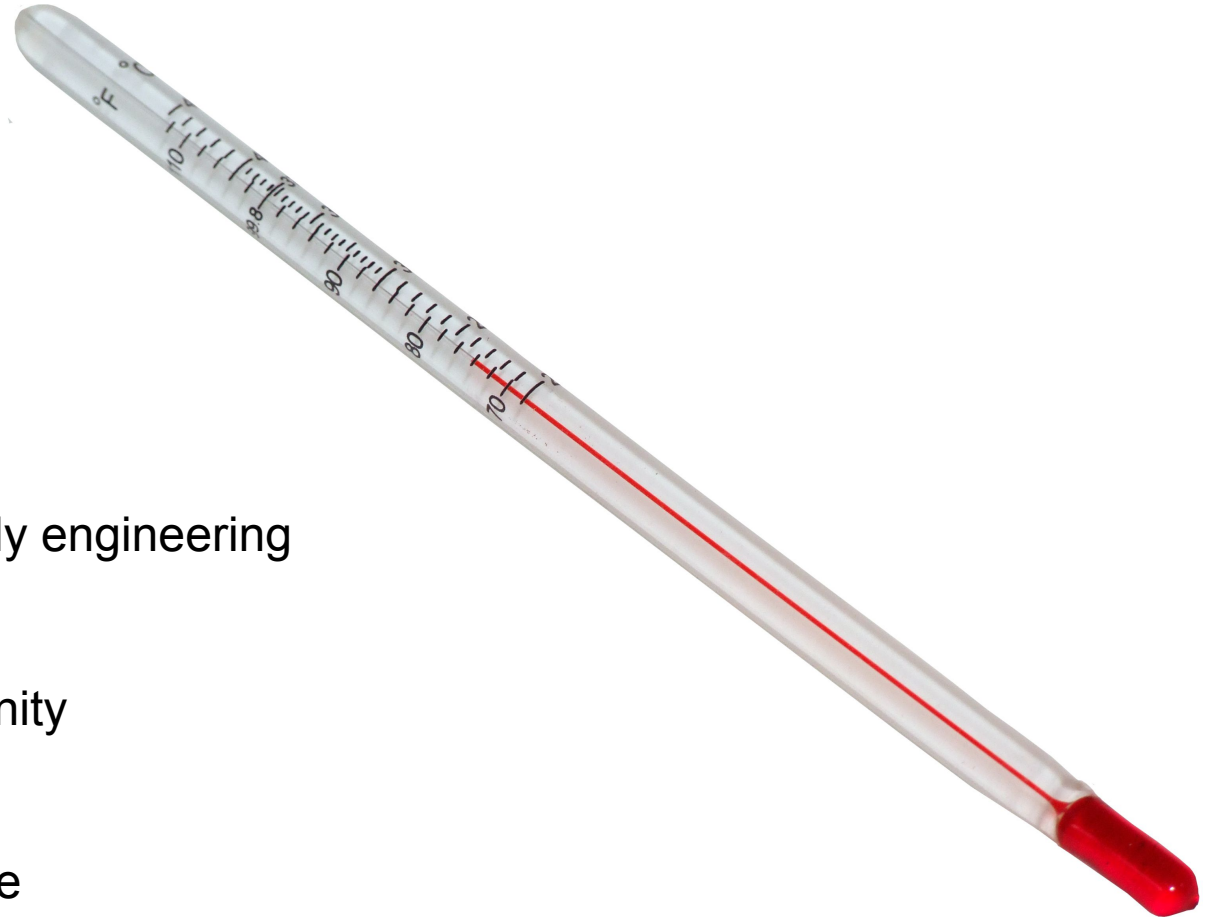
Cancer Vaccines

Immunotherapies

Antibody drugs, Antibody engineering

Immunity vs. Autoimmunity

Virulence and resistance



High hanging fruits

HIV

Malaria

HCV

Tumors

Allergies

Neglected diseases



Interplay

Superantigens

Decoy epitopes

Hypervariability

Complex life cycle

Complex immune response

Molecular mimicry

Autoimmunity



High hanging fruits

HIV

Malaria

HCV

Tumors

Allergies

Neglected diseases



New Technologies

Data-driven predictions

Big data

Genomics



Schedule

June 3: Introduction

June 6: Databases and Unix

June 7: NGS analysis

June 8: sequence and structure analysis of TCR and BCR

June 9: TCR epitope prediction

June 10: Vaccine design

June 13: Immunotherapies

June 14: BCR epitope prediction, antibody humanization

Teaching Materials

Slides

Reading materials on CampusNet

Immunological Bioinformatics book

+

self assessment quizzes (20 minutes each day)

not used to determine the final grade

Final project

Group work (~4 people per group)

1 week

Topics will be given after June 14

Exams

June 15-21: Projects

June 22-23: Exams

Group presentation + individual oral exam

Questions?